MTTKTCK
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Marathi AW12
● Telugu AW17
Tamil AW16
Kanada AW10
Tulu AW18
Coorg AW5
Kerala AW11

[For a map of the structural elements of South India see 6: Spate AW1 India, category 116, p. 694.]

133, 113 Telugu AW17

[For a regional division of the Indian sub-continent see Chapter XIII, 6: S pate AW1 India.]

● 133, 113 Telugu AW17

[For a description and discusssion of the structure and relief of the entire Indian sub-continent, see 6: Spate, AW1 India, category 116, pp. 3-36.]

133, 113 Telugu AW17

[For general information on the distribution of various types of flora and its relation to climate and soil, see 6: Spate AW1 India, category 116, pp. 63-92.]

1: Dube E-5 (1951-52) 1955 AW17 Telugu AW17

CHAPTER ONE

The Setting

1. THE SETTING

105 131 SHAMIRPET is a village situated at a distance of about twenty-five miles from the twin cities of Hyderabad and Secundrabad in the Deccan plateau of India. Culturally it lies in the region known as Telangana, which is itself a part of the wider culture-area of Andhra-desa. Telangana is a country of fertile fields and barren rocks; a land of temples, tanks and lakes. It is estimated that there are over twenty thousand lakes and tanks in this region, which covers an area of more than 42,000 square miles. Shamirpet is located by the side of one of these tanks and lies on the road that links the capital city of Hyderabad with Karimnagar, the headquarters of the northern district of that name.

133 134 137 132 The picturesque landscape of the village is truly characteristic of the Deccan plateau. The soil is in part black and in part red, and is suitable for the cultivation of rice, millet, castor and other oil-seeds, pulses and tobacco. An endless series of barren rocks formed of gneisses and granites dominates the land. Tall palmyra trees stand magnificently and imperiously against the often-clear sky, evergreen shrubs circle the rock formations and tamarind trees grow here and there near human habitation. In the countryside surrounding Shamirpet the average annual rainfall is about twenty-five inches. From Indian standards, the climate is moderate and knows no extremes either in winter or in summer. The days during the summer season are rather hot, the temperature often touching 112° F., but the evenings and nights are always cool and pleasant. In some winter nights the temperature drops to 137 45° F. There is little forest in the country immediately surrounding

6:Spate N-4 (no date)1954 AW1 India
Bihar-AW2
Telugo AW17

[Jamshedpur]

always been prominent lines; bars and light structural steel comprise about a quarter of the finished products, rails and fishplates about 14%. The 1939–45 war saw a great expansion in quantity and range, including the production of light armoured vehicles. Associated industries include tinplate (developed in association with the Burmah Oil Co., production 40,000 tons in 1947), cables, wire and wire nails, agricultural implements, enamelled and galvanised sheets, and all types of castings. Most of the undertakings responsible for these products, as well as the mines and quarries on which they are based, are part of the multifunctional 'Tata group' which has wide ramifications, from soap to aviation. The metallurgical and engineering side has thus elements of both vertical and horizontal monopoly. In Bombay is the general staff of this industrial empire, and its service corps; here, set down in the incongruous jungle, is its arsenal.

Telangana

The remainder of the Peninsular Interior, within the bordering En Hills, is perhaps best regarded as the Deccan component of Andhra Desa, the country of the Telugu-speaking peoples; a component which differs widely from the littoral districts of 'Andhrastan'. The area here considered consists of the Hyderabad Telangana (with Raichur, officially in Marathwara) and the Madras 'Ceded Districts' of Anantapur, Bellary, and Kurnool. The fourth Ceded District, Cuddapah, lies mostly in the Cuddapah Ranges region, as indeed does much of Kurnool. The limits, except where formed by the Deccan Lava edge and the front of the Cuddapah Ranges, are very vague; pending serious work on the Mysore peneplains, we may take the Madras/Mysore boundary as an approximation, though this includes Kanarese-speaking populations of 64 and 49% in Raichur and Bellary, which nevertheless go physically with the rest of the present region. In the SE the little river basins lying between the Cuddapahs and the Mysore plateau, in E Anantapur and W Chittoor, are really another 'left-over' subregion, in Chittoor transitional to Tamilnad; they will receive separate treatment. With these rather wide qualifications, the name Telangana seems appropriate, or at any rate least inappropriate.

The Physical Aspect

The bulk of the region consists of peneplains developed on the Archaean gneisses. In the N, however, faulting has preserved a belt of Gondwanas (with some coal) along the lower Godavari trough: much of this is below 500 ft, but with its dissected terrain it has remained very largely under forest of a dryish deciduous type.

The most general levels lie between 1600 and 2000 ft; in the S, below the rather ragged break of slope down from the Mysore plateau, the Kistna

6:Spate N-4 (no date)1954 AW1 India
Telugu AW17

and Tungabhadra valleys lie at 1000–1500 ft, and to the NW the watershed between the Bhima and the Godavari is a great swelling upland reaching 2400 ft in places. But the general aspect nearly everywhere is that of practically senile peneplains, intersected by broad, open, almost completely graded valleys, and littered with monadnocks which range from considerable hill-groups to innumerable fantastic tors which look like dumps of gigantic road-metal. Around Hyderabad City these form "a chaos of granitic boulders . . . piled up in bizarre heaps, as if giants had amused themselves with childish games"; in places these rocky belts form a wilderness wide enough to act as a marchland.[28] With the poor sandy red soils of the gneisses and granites, a variable rainfall of 25–35 ins., and May mean temperatures in the 90s, life is hard except in favoured basins, where soil-wash and tank irrigation give some prosperity. Bare hills, reddish-khaki plains with scattered thorny scrub, rivers merely ribbons of sand for half the year or more, tanks bunded into the little valleys, all combine to produce a landscape with a desolate and brooding charm. The contrast between Hyderabad Marathwara and Telangana is extremely striking, and is brought out by Figs. 130 and 131.

The Ceded Districts are if anything worse.[28] In Marathwara there is hardly any surface water in the hot weather, except in the bigger streams; in Sn Telangana even this exception hardly holds. The railway bridges are stoutly built to withstand the immense volume of monsoon water in rivers which are then half a mile or more wide; in the hot weather they traverse great flats with a yard or so of water in the middle, and the herds of cattle or goats crossing the bed are recognisable from afar by their great clouds of dust.

Except for the jungles of the N, the region presents a decided savannah aspect, poor savannah with widely spaced acacias. Most of the tors are absolutely naked, and their skirts (with much of the more or less level ground) carry only a thorny scrub, in which euphorbias are prominent, while in damper depressions there are scattered palms, toddy or the wild Indian date. The scrub is secondary, on ground long subject to the depredations of sheep and especially goats, or once cultivated.

Agriculture

Rainfall, by and large, is much the same in Telangana as in Maharashtra; if anything more favourable, since the region lies farther from the lee of the Ghats and more open to Bay of Bengal influences. But differences in terrain and soil are decisive. The area here considered is about 75,000 sq mls, of which the TSA is only about 43% (approximately 20,250,000 ac.).[29] Forest

[28] E. Reclus, *L'Inde* (1883), 506; cf. *Hyderabad Gaz.* (1909), 2.
[28] For some vivid remarks, see J. C. Molony, *A Book of South India* (1926), 166.
[29] Figures even more approximate than usual, as those of Hyderabad are internally suspect.

6:Spate N-4 (no date)1954 AWI India
Telugu AWI

312 Tungabhadra scheme; but the history of large-scale irrigation here is discouraging, though of course much experience has been gained since the 377 Kurnool failure. With the development of hydro-electricity there may come 491 decentralised industrial development on the Mysore model; but Mysore 433 had a more solid backing in at least some industry, sericulture and Bhadravati iron for instance, to give a base. Telangana is not without resources such as oilseeds and fibres (including sheep and goat wool), and in view of *India's* shortages in non-ferrous metals development of the poor communication net might lead to at least some exploitation of the scattered minerals. But when all is said, it seems likely that Telangana will remain, if not a backward, at least a poor country.

The Anantapur-Chittoor Basins

● 133 Between the bold scarp of the Palkonda Range and the higher Mysore levels are a series of basins around the middle courses of the Penner tributaries—Chitravati, Papagni, Punchu/Cheyyeru, the last two with a remarkable confluence-gorge in the Palkondas. To the SE the sub-region breaks down to the Nellore/Coromandel plains through the little intermont basins of the Nagari Hills (up to 2800 ft) and through the broader Swarnamukhi valley, which may occupy a fault-trough under the Palkondas. The whole area is crossed by N/S or NE/SW trap dykes, which may also have some influence on the remarkable drainage-pattern.

311 The area is isolated and poor, except in the extreme SE—the Nagari valleys, culturally transitional to Tamilnad. Only 20% of Chittoor Dt is cultivated—less than any other Madras District except the Nilgiris—but the density is **304**, intermediate between the Ceded Districts (*c.* **185**) and the coastal plains (**450–650**). Millets account for over 40% of the cropped area, followed by rice and groundnuts (24 and 14%).

491 There is no urban or industrial development worth mentioning. The
311 Nagari basins are better cultivated than those of the plateau, but even they
133 are not very impressive agriculturally: their flattish floors are broken by patches of sandy soil, almost bare but for a thin grass/acacia cover, and by naked rock exfoliation surfaces, looking like *roches moutonnées* and often used as threshing floors. Around the plain a lateritic piedmont slope fringes the craggy hills, with boulders as big as a small house on the talus slopes.
[361] Below the lateritic apron is a better-watered and more fertile piedmont strip, which is in places a solid belt of paddy, the zone of bush and trees along the laterite margin being a favoured settlement-line. It is a strange landscape: fantastic hills, stacked and pinnacled, long ridges capped by massive quartzites, reflected in the still waters of the big tanks with their borders of toddy palms; an eerily attractive picture under iron-blue or grey skies.

6:Spate N-4 (no date)1954 AW1 India
Orissa AW13
Central India AW4
Telugu AW17

CI O 133

forested plateau, most of which drains to the Godavari via the Indravati; it contains a few Cuddapah inliers, but is for the most part a mass of undifferentiated gneiss, covered by a mass of jungle.

CI O 631 137 311

Nearly all this area was divided amongst a multiplicity of very backward states which, except for Bastar and Kanker (which have gone to Madhya Pradesh (CP)), are now merged with Orissa, increasing its area by 85% but its population by only 58%. A large proportion of the region consists of dense or open deciduous forest, with some sal; in Bastar, indeed, open ground amounts to only a small fraction of the state's 13,701 sq mls. The largest, indeed the only extensive, non-forested area is in the Tel valley. Koraput Dt may be regarded as typical: here nearly 4·75 m. ac. of a total of 6·39 m. are forest or scrub,[*] and of the TSA of about 1·42 m. ac. over half is rice—dry hill-rice, or terraced in the valleys—and the only other single crops of much importance are ragi and gram. Shifting agriculture, supplemented by forest produce, is prevalent; mahua flowers are distilled, and mango-stones ground for flour. Taken as a whole, and despite the mineral reserves (iron especially, chromite, bauxite, manganese), the region is probably the most jungly of all India.

CI O [135]

CI O 377

The Mahanadi gorge, however, offers sites for joint hydro-electric/irrigation development at Hirakud, Tikarpara, and Naraj (Fig. 133). The first of these sites is already being developed to irrigate 1 m. ac. (mostly in Sambalpur Dt) and to generate 350,000 kW—ultimately! It will be linked with the Pipri (UP) and Tilaya (Damodar) dams and provide power as far as Cuttack and Nagpur. In the S a smaller scheme (100,000 kW) has been initiated, or at least surveyed, on the Machkund River.

(b) *The Cuddapah Ranges and Basins*

T 133

Another Gondwana trough lies along the lower Godavari, and for about 100 miles the rampart of hills is completely breached, the plateau breaking down through dissected and forested country to the Godavari/Kistna deltas. Beyond the Kistna (which is in fact superimposed across their tip) lie the most interesting of the En Hills, which from their rocks and position may be collectively styled the Cuddapah Ranges and Basins (Figs. 137, 138).

The region forms a great crescent, the heart of it being the wide Nandyal valley (*c.* 700–800 ft), drained by the Kunderu, formed on Kurnool (L. Vindhyan) limestones and shales and extending from the Kistna/Tungabhadra confluence to Cuddapah. To the W this trough is marked off from the Deccan plateaus by the out-facing scarps of the Erramalais/Seschalam Hills/Palkondas, formed of massive quartzites interbedded with slates and lavas; in the S especially the Palkondas, here reaching 3000 ft, form a very fine scarp overlooking the Anantapur-Chittoor basins (Fig. 137). The En limb of the central Kunderu basin is formed by the parallel Nallamalais and

[*] Including uncultivated and 'not available for cultivation'.

6:Spate N-4 (no date)1954 AWl India
Telugu AW17

Velikondas ('outside hills'), 2500–3000 ft high and separated by a beautifully regular development of longitudinal valleys. The evolution of this remarkable drainage-pattern, with its elements of superimposition and of strike subsequents, would make a fascinating geomorphological study; especially notable are the gorges of the Kistna, Penner, and Cheyyuru (Figs. 137, 138). In the E, especially in the Velikondas, the Cuddapah rocks have been subject to great Wwds overthrusting and inversion; the lithology here in-

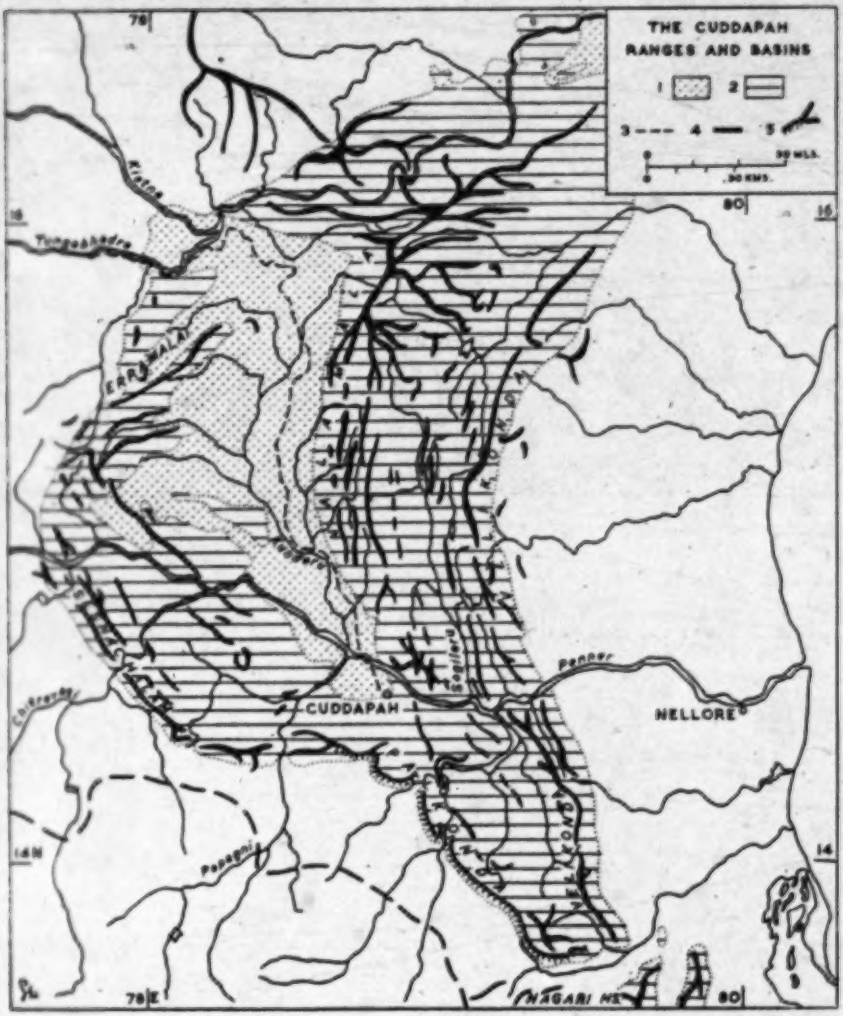

Fig. 137.—The Cuddapah Ranges and Basins. 1, Vindhyan; 2, Cuddapah, outcrop; 3, Kurnool–Cuddapah Canal; 4, approx. edge of Mysore plateau; 5, main ridges and scarps.

133 dicates deposition in shallow but not sheltered waters, and the general lie of the E coast may thus be of great antiquity. The change in strike between the Orissa Hills and the Cuddapahs is very closely followed by the coast.

137 132 523 The hills are wooded and the pattern of relief stands out clearly on forest and population maps (Figs. 18, 30); but the forest is thin, rainfall being only about 40 ins. and the rocks porous or fissured. The few inhabitants are mostly Chenchus, an aboriginal tribe living a semi-pastoral existence eked out by the collection of honey, bamboos, fuel for the railways, and other minor forest produce.

311 312 The valleys, however, though on the whole poor enough, have a fair amount of cultivation, mostly jowar (25–30% TSA), other millets, groundnut (16–20%), with some irrigated paddy. The topography in the longitudinal valleys favours the construction of large tanks by bunding a transverse [496] tributary gorge. The main (GIP) Madras–Bombay railway strikes diagonally across the S of the region, and is one of the most interesting traverses 133 in India. The hill country is first entered in the Nagaris, which are the last 361 Cuddapah outliers; here Renigunta and Tirupati are little towns control- 311 ling at once the route up the Swarnamukhi, the crossings of the river, and the col to the N between the Palkondas and Velikondas. Beyond, in the Razampeta corridor, the contrast between cultivated floor and barren hills is exceedingly sharp. The generally arid aspect is mitigated by groves of [342] mangoes around the tanks; houses are stone- or mud-walled, and round beehive huts, striped vertically in white and rusty red, attest the Telugu country. After crossing the wide bed of the Cheyyeru, the line emerges at Cuddapah from grey and arid hills into a greyer plain, a vast ash-coloured expanse largely given over to dry cultivation. The region lies on the margin of the October–December rainfall area of the Madras littoral, and the rivers rise in the dry Mysore Maidan, not in the Wn Ghats as do Kistna and Tungabhadra; hence, even in August, the great streams—Penner itself, Cheyyeru, Papagni, Chitravati—may be spreads of quartzite boulders, shingle, or sand, several hundred yards wide with a line of water a yard across, or even not a drop; while only 90 miles to the N the Ghats-fed rivers are full, great ribbons of muddy water half a mile or more wide.

312 Through the Kunderu valley runs the ill-starred Kurnool Canal, constructed in 1860–76 by a private company which apparently failed to notice the difference in the régimes of Peninsular and extra-Peninsular rivers; the complete, but inefficient, canal had eventually to be taken over by the government in 1882 after two decades of mismanagement. The topographical layout is obviously encouraging, and it is now proposed to recast the whole project, with reservoirs on the Kistna and at Someswaram in the lowest of the Penner watergaps; the project, if carried out in full, would irrigate no less than 3 m. ac., mostly, however, in the coastal plain of Nellore.

6:Spate N-4 (no date)1954 AWI India
Telgv AWI
• 133

Fig. 138.—The Penner Water-gaps. *All* permanent water on original map is shown. SOI 1/253,440 57 J and N; courtesy SOI.

CHAPTER XXIV

THE EASTERN LITTORAL: ORISSA AND ANDHRA DESA

(Regions XXXIII and XXXIV)[1]

Generalities

THE En Littoral forms a strong contrast to the Wn. The lowland is in general much wider, and much of it is a true coastal plain structurally, with in-facing cuestas developed on Cretaceous and Tertiary epeirogenetic deposits; elsewhere it is formed of the great deltas of the Mahanadi, Godavari, Kistna, and Cauvery. In the S the coastal lowland is no less than 60–80 miles wide, and is backed not by a steep more or less continuous wall but by the broken Tamilnad Hills (Javadis, Shevaroys, etc.) and by the low (1000–1500 ft) plateaus around the middle Cauvery.

The climatic variation on this 1200-mile coast is highly significant. The N lies full in the track of the Bay of Bengal branch of the summer monsoon and receives *c.* 60 ins.; but Sn Orissa already lies on the fluctuant flank of this great current and receives a lower (*c.* 50 ins.) and less reliable fall. As we move S we enter the largest area of anomalous rainfall régime in the sub-continent, the SE which has its rainy season in the months of the retreating monsoon, October–December. From the great bend of the coast S of the Kistna delta this régime is dominant, and the lie of the coast—sub-parallel to the track of the rain-bearing depressions—contributes to generally low figures. The extreme S, Ramnad and Tinnevelly, is sheltered from the Arabian Sea branch by the high Anaimalai/Cardamom block, while to the N the great projection of the Cauvery delta, low-lying as it is, yet shuts off some at least of the retreating monsoon rain. Here we have remarkably low figures (25–30 ins.) for a coastal area in sub-equatorial latitudes.

The agricultural contrasts which would normally result are to some extent masked by irrigation in the great deltas, but are nevertheless striking enough (Fig. 139). Orissa is as typical a paddy-land as Bengal—indeed in Balasore Dt over 95% of TSA is *unirrigated* paddy, and millets are totally absent. S of the Kistna, however, they generally exceed the area of *unirrigated* rice, and in places all rice; paddy dominates the landscape only where irrigation is possible on a reasonably large scale. There is further the difference between tank- and canal-irrigation, the former dominant everywhere away from the deltas.

The primary division, then, is that between the areas of normal and of

[see cat. 116, pp. 361-362 and map facing p. 352.--ANALYST]

anomalous season of rain; but this is cut across by the deltas and, in the S especially, there is considerable regional diversity. Culturally also there is the great distinction between the Aryan-speaking (Oriya) lands N of Vizagapatam and the Dravidian S, itself divided into Andhra Desa (Telugu)

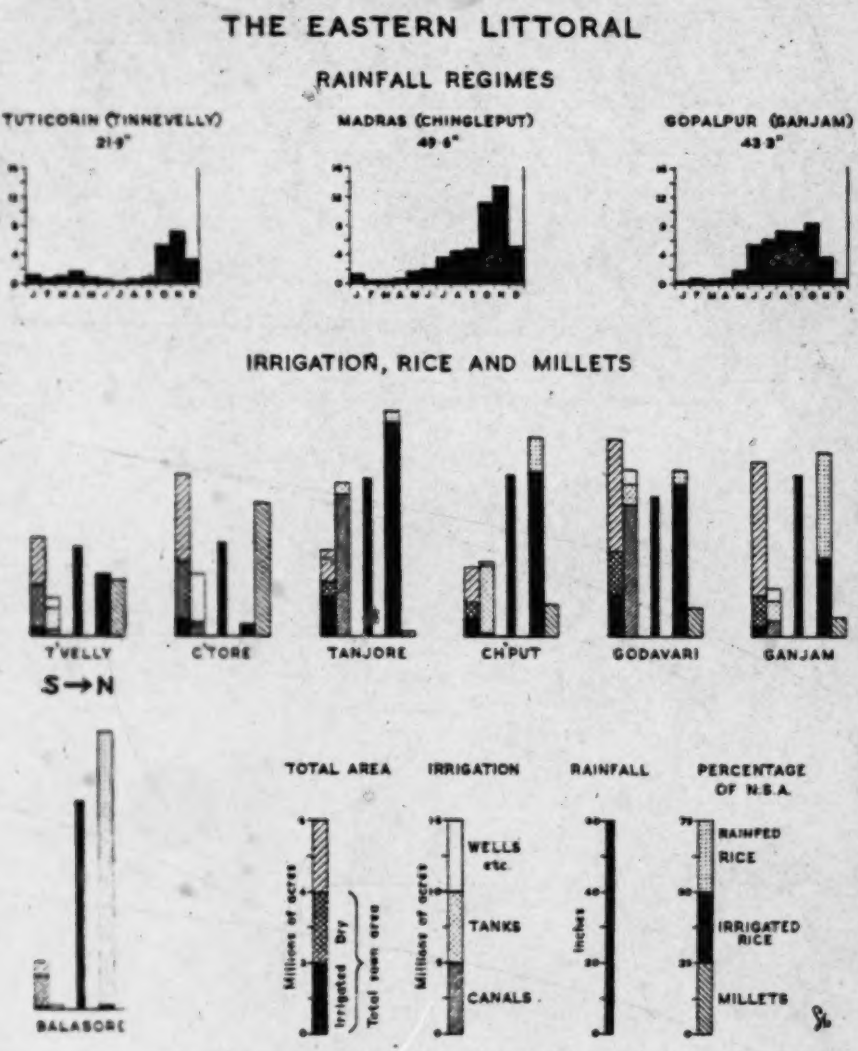

Fig. 139.—The Eastern Littoral: Rain, Rice, and Millets.

AWI India
Orissa AW13
Telugu AW 17

and Tamilnad, the latter area having the highest development of Dravidian culture. The great quadrant of Tamil country, between the Mysore Plateau, the Sn blocks, and the sea, is indeed very complex; and on the whole it seems best to separate its treatment from that of the rest of the En Littoral, especially as the activities of the Madras Geographical Society enable it to be handled in rather more detail.

With all this in mind the N can be divided as follows:

1. Deltaic Orissa.
2. Northern Circars: (a) Vizagapatam/Ganjam Coastal Plain.
   (b) Godavari/Kistna Deltas.
   (c) Nellore Coastal Plain (transitional to Tamilnad).

Deltaic Orissa

Three rivers, Baitarni, Brahmani, and Mahanadi, combine to form a great alluvial salient, 125 miles across the base (Chilka Lake-Balasore) and generally over 50 miles wide. The Mahanadi indeed is one of the most active depositing streams in the sub-continent, and its discharge is extraordinarily irregular—the maximum near its mouth is as large as that of the Ganges, nearly 2,000,000 cusecs, while it has dwindled to 1125. Flood is the greatest hazard of agriculture in Orissa, but the silt is some recompense.

There is the so frequent three-fold division: swampy jungle on the prograding seaface; a zone some 40 miles wide of firm older alluvium; the lateritic shelves on the irregular upland margin. Towards the W there are many outliers of the gneissic hills, which in the Nilgiris of Balasore, and again N of Chilka, reach nearly to the sea. Chilka itself varies in size from 350 to 450 sq mls, and is salty and fresh alternately. Only a few feet deep, it is cut off from the sea by a long spit, on which, and to the S of the lake, is a raised beach 20–30 ft above present flood-level. It is an important fishing ground and a source of thatching reeds.

Rainfall is 60 ins., and the fairly extensive canal-irrigation has never paid its way, being of value essentially as a guarantee against the occasional years of drought. The main headworks are at the head of the Mahanadi delta proper, above Cuttack; the canals were originally designed for navigation as well as irrigation, in order to break down the notorious isolation of the province, which until 1912 was a part of Bengal and thence till 1936 united with Bihar—surely one of the most unnatural administrative groupings ever devised. But the railway destroyed the *raison d'être* of the coastal canal, and the High Level Canal which skirts the landward margin of the plain is of most use as providing some outlet for upland flood water; as Reclus pointed out, control at the debouchment of the valleys is the real essential here.

6:Spate N-4 (no date)1954 AW1 India
Orissa AW13
Telugu AW17

Mercara in tiny Coorg, and it is in any case being superseded as the seat of government by a new town at Bhuvaneshwar, 20 miles S of Cuttack.

There may, however, be a brighter future for Orissa. The merger of the hill states increased the area by 85% (to 59,869 sq mls) and the population by 58% (to 14,645,946); these are the largest gains by merger in all *India*. The ending of the fantastic fragmentation of the State may facilitate co-ordinated development of the Mahanadi power projects and flood control (above, 678); it also gives some hope for the development of the forest resources of the excessively backward hills: timber (floated down the Mahanadi), lac, tussore silk.

The Northern Circars

This region, which corresponds to littoral Andhra Desa, is a transition zone in every respect. In the N we have the normal monsoon rainfall distribution; but the October–December proportion increases steadily in importance Swds, together with a decrease in total amount and in rainy days. Already in Kistna Dt a third of the rain comes in the last quarter of the year, but these rains are more uncertain than those of the more usual monsoon months. In Ganjam Oriya is still dominant, but where the coastal plain narrows beneath the abrupt peak of Mahendragiri (4923 ft) the Aryan tongue gives way to Dravidian Telugu, which holds sway as far as the Nagari Hills (Fig. 127). To the S Nellore represents a further stage in the transition.

Ganjam, Vizagapatam, Godavari E and W, Kistna and Guntur Dts form the Northern Circars, brought under Muslim rule by the Golconda kings about 1575, ceded to the French in 1753; 12 years later the EIC obtained a grant of the whole from the Mogul Emperor, though of course his nominal subordinate the Nizam had exercised wh. government existed, apart from that of warring petty rajahs; this was the Company's first considerable territorial acquisition outside Bengal. Despite the Telugu culture and the modern historical identity, the region seems to lack unity. The proliferation of small ports and trading stations in the early European phase was perhaps a reflection of this; the Dutch factories at Bimlipatam and Coconada were not ceded to the EIC until 1825, and they had forced the early English settlement at Pulicat to move in 1625 to Armagaon, the parent of Madras. In Masulipatam the factory at French-pettah was not handed over to *India* until 1947, while English-palam and Volanda (Holland)-palam mark the settlements of those nations in the same town. Nizampatam was the first English station on the E coast (1611), and Yanaon (area 5 sq mls, poptn 5711) in the Godavari Delta survives as the last relic of the 18th century French holdings.

The total area is about 25,000 sq mls with a 1941 population of *c.*

12 m.; densities increase from Ganjam (420) to E Godavari (714) and then decrease to Guntur (393); beyond the regional limits Nellore, with more Archaean terrain than the central parts of the Circars, and less (and less reliable and well distributed) rain than the Nn, had only 204. On the whole it seems best to treat Ganjam/Vizagapatam and the deltas separately.

(a) *The North: Ganjam and Vizagapatam* (*Vizakhapatnam*)

Essentially this is the area with over 40 ins.: the three Sn taluks of Vizagapatam fall a little short of this. The lowland narrows to 12 miles under Mahendragiri, but on either side of this gate are the embayments of the Rushikulya (Ganjam) and the Languliya and Vansadhara (Vizag) valleys. The plains are floored by red lateritic soils near the hills, shading off into black loams and clays; but they are cut up by numerous irregular outliers of the En Hills: thus Vizagapatam itself lies between the 1600-ft Kailana Ridge to the N and the 1100-ft Yaroda to the S; the latter runs out to sea in the bold cliffs (300 ft) of Dolphin's Nose which shelters the port, while in the Nn suburbs of the town are the peculiar Waltair Highlands, *c.* 150 ft high and formed largely by the accumulation, since the Pleistocene, of red loams partly fluviatile and partly perhaps aeolian.[3]

Of a TSA of some 4 m. ac., rice accounts for about 1·65 m. ac., ragi 390,000, oilseeds (chiefly groundnut) 500,000, the balance being widely distributed amongst millets and pulses mainly. Irrigation is on the whole unimportant, much of it being dependent on temporary mud-and-brushwood dams across the short rivers.

Mineral resources are few—graphite, manganese, kaolin, mica—and hardly developed; a potential resource of some interest in this atomic age, though limited in amount in comparison with other *Indian* occurrences, is the ilmenite and monazite in the dunes and beaches around Vizagapatam.[4] Industrial development—with the important exception of the Vizag shipyards—is again negligible: two or three jute and sugar mills in the Vizagapatam plains. Hydro-electric development in the hills might alter this.

Again there is only one real town, 'Vizag' itself (**108,042**), which has developed considerably since the opening of the railway up the Languliya valley to Raipur and the subsequent dredging of a deep-water harbour in the tidal marshes. The accommodation at quayside is limited, but it is more up-to-date than at most E coast ports. The selection of Vizag as the main shipbuilding centre of *India* is presumably because of its situation as the nearest *ocean* port to Jamshedpur, but it is still a long way round. Ships up to 8000 tons have been launched. The hinterland extends to Nagpur and the chief trade is in Madhya Pradesh (CP) manganese, and oilseeds and their products. The small ports of Bimlipatam and Gopalpur are quite

[3] See the very original paper by C. Mahadevan and N. Sathapathi, "The Origin of the Waltair Highlands", *IGJ* XXIV (1949), 26–51.
[4] *Ibid.*, *loc. cit.*, 29.

6:Spate N-4 (no date)1954 AW1 India
Telugu AW17

dead, especially since the cessation of coolie emigration to Burma and Malaya.

(b) *The Deltas*

These, like N Kanara on the W coast, form an 'overlap' region, the breaching of the En Hills by the Godavari and the Kistna leaving the limits in the hinterland indeterminate where the hills virtually disappear for about 100 miles. There is of course a marked break of grade where the rivers cross the line of the hills—the Kistna, as we have seen, is actually superimposed across the Nn end of the Cuddapah Ranges, and here the gradient is 3½ ft or more to the mile, against 7–9 ins. near the sea. Their discharge is of course irregular; it has been estimated that in high flood the Kistna carries enough silt "to cover daily an area of 5 sq mls to a depth of one foot".[1]

[1] *Madras Gaz.* (1908), I. 167.

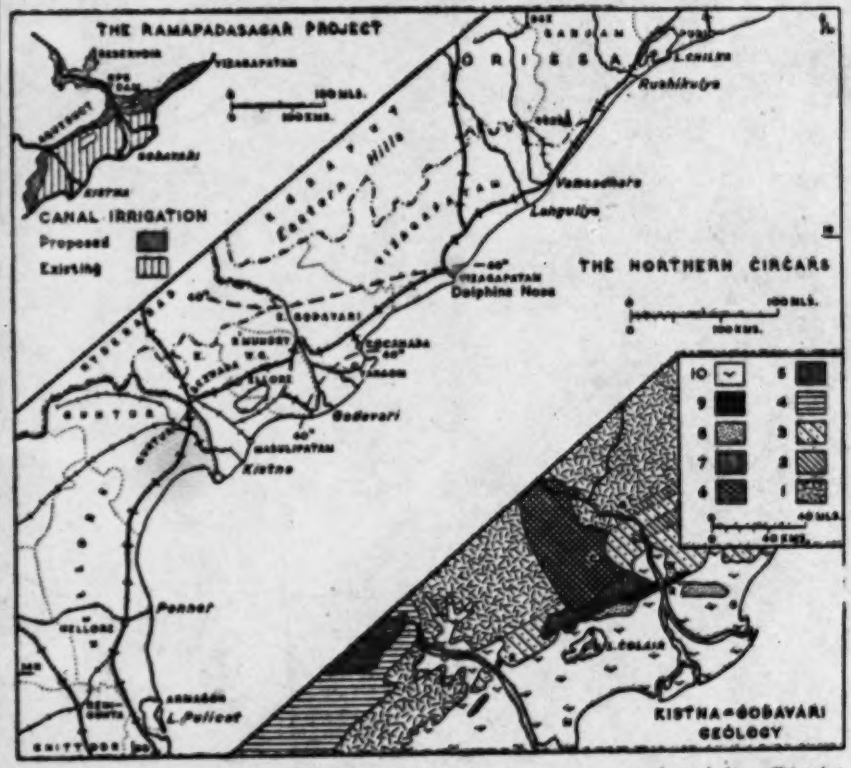

Fig. 140.—ANDHRA DESA: THE NN CIRCARS. On main map, dotted line District boundaries—K, Kistna, WG, W Godavari Dts; all railways ST, BG (thick line) or metre. *Geology*: 1, Archaean gneisses; 2, Charnockites; 3, Khondalites; 4, Cuddapah; 5, Vindhyan; 6, Lower, 7, Upper, Gondwana; 8, Tertiary; 9, Deccan Lava outlier; 10, alluvium. G, graphite; K, kaolin; C, coal (doubtful value); other initials towns, as on main map.

6:Spate N-4 (no date)1954 AW1 India
Telugu
AW17

133 311 The worn-down margin of the Archaean hinterland is poor country: undulating plains broken by little hills, with much waste and stony ground; soils are mainly lateritic with some loams. The coast for several miles inland is largely fringed with mangrove swamp (valuable as a fuel reserve) or sand-dunes rising to 30 or 50 ft. Between the relatively negative upland and the completely negative coast lie the rather limited areas of true delta. At Bezwada (Vijayarada), 45 miles inland, the Kistna crosses a low gneissic ridge in a 1300-yd-wide gap; this is utilised for the headworks of canals irri- [312] gating about 900,000 ac. The Godavari Delta begins 40 miles inland at [731] Dowleshwaram, where a dam 2¼ miles long feeds canals for another 1 m. ac. (TSA; NSA 800,000). The deltas are of course liable to flood, at times disastrous; and cyclones are also a danger, that of 1864 causing 30,000 deaths and ruining the prosperity of Masulipatam port for ever. In the Kistna delta the land slopes away from the main distributaries at about 18 ins. to the mile, and in that of the Godavari below Dowleshwaram "the country is a vast expanse of ricefields dotted with gardens and villages. During the rains the greater part of this tract becomes one sheet of water, only village sites, canal banks, roads, and field boundaries appearing above it. Later in the year, as the rice grows higher, the dividing boundaries are hidden; and the whole country looks like a single ricefield, the groves around the villages, the road avenues, and the white sails of the boats gliding along the main canals breaking the uniform sea of waving green crop." * There is still a certain amount of local traffic, chiefly paddy, on the canals.

Between the deltas Colair Lake occupies a depression not yet silted up, though constantly diminishing by natural and artificial encroachment; covering about 100 sq mls in the rains, it has at times dried out. Its numerous islands are intensively cultivated, and there is a good deal of fishing.

132 241 312 Rainfall exceeds 35 ins. only in the seaward half of the Godavari Delta, and the tendency to October maxima is unfavourable to the groundnut and early paddy harvests, while cotton sowings must be late. Irrigation, if not essential, is at least highly useful; its importance is reflected in the high densities (up to 1100 plus) of some delta taluks. The following figures (in thousand acres approximately) give a summary view of the agriculture:

241 311

	Total area	*NSA*	*TSA*	*Rice*	*Total foodgrains*	*Ground-nuts*	*Total oilseeds*
E Godavari.	3981	1072	1380	692	1070	4	142
W Godavari	1511	800	1111	697	823	42	115
Kistna .	2270	1119	1225	572	877	185	195
Guntur .	3684	2092	2384	400	1405	365	395

* *Ibid.*, 268–69.

6:Spate N-4 (no date)1954 AWI India
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369 chintzes. The opening of the coastal railway completed the ruin of the
504 cyclone of 1864; yet it is still generally known as Bandar ('the port'). Cocanada is rather better, with many more wharves and jetties; but again the anchorage is 5–6 miles offshore. The ports might—at large expense—be developed as outlets for En Hyderabad, should that backward area itself be developed; but obviously the actively prograding deltas impose severe difficulties on any reconstruction; at Cocanada constant dredging is necessary to keep a depth of 4–6 ft (LWOST) on the bar. In the great days
167 of the coolie traffic, before the depression and the Indo-Burmese race-riots of the 1930s, Cocanada had an enormous migrant turnover.

(c) *Nellore*

● 133 The traditional Sn boundary of the Telugu country lies along the Tiru-
312 patti escarpment, overlooking the Renigunta basin; beyond is Tamilnad, a country, almost a nation, on its own. The transition is reflected in the increasing importance of tank-irrigation, though this will be changed if the Penner is ever fully utilised. Physically also the transition is marked by patches of marine Jurassics and the coastal belt of sub-recent Cuddalore sandstones; both become more important in the Madras coastal plain (Fig. 141).

133 Most of Nellore is poor country: low peneplains of Archaean gneisses
311 and schists, stony or lateritic and largely covered with scrub. Even allowing for the large part of the District in the Velikondas, agriculture is severely limited. The coast is fringed by a belt of alluvium 2–14 miles wide, between
[339] low-level laterites and the blown sand of the shore. The most interesting coastal feature is the great salt-water lagoon of Pulicat; the islands of the lagoon are used for burning lime from the great shell-banks (this is a main source of *chunam* plaster for Madras building) and salt smuggling is or was important.

312 The Penner and its associated tanks (Fig. 138) are already important for irrigation, and will be more so when the old scheme for an anicut at the Someswaram watergap through the Velikondas is carried out.

135 Away from the Cuddapah Ranges (above, pp. 678–82), the only mineral
471 wealth consists of laterite, building-stones, the coastal salt and shell-lime, and mica from the Archaean schists: output of mica is about 11,000 tons p.a., rather under 10% of *Indian* production. Nellore (56,315) is almost entirely administrative and commercial; it has a little pottery, but other industrial development is practically absent.

631 The Circars form the nucleus of the new Andhra State which neverthe-
197 less is to be administered from distant Kurnool. This is the first experiment in "linguistic states", and it can hardly be said that its geographical foundations are very sound or imposing (cf. 126, 675, 682).

31: Slater S-5 (1916-1917) 1918 AW1 India
Telugu AW17

CHITTOOR DISTRICT.

THETTUPALLI.

[*By E. Krishnamurthi, Christian College, Madras.*]

361 133 *Preliminary.*—Thettupalli, belonging to the Punganur Zamindari in the Chittoor district, is situated in a valley, surrounded by some rocky, and some gently sloping hills on three sides within a radius of 1½ miles, and on the north by hills more distant. The hills are not cultivated. Some have grass, some scrub jungle, some thick forest, about ten miles away there is dense jungle with tigers. It is on the same level as the Mysore plateau, about 2,000 feet above sea-level.

162 The total population of the caste village is 149—men 43, women 43, children 63 (36 males, 27 females).

[94] Castes 11.—Brahman, Komati (Vaisya), Kapu (cultivators), Balija (cultivators), Dhoby, Karamala (Blacksmith), Boya (cultivating low caste), Yekili (low caste Muhammadan), Kummara (Potter), Muhammadan, Dommara. The Dommaras are travelling pedlars who also cultivate and manufacture country carts.

Caste.		Brahman.	Komati.	Kapu.	Balija.	Dhoby.	Karamala.	Boyas.	Yekili.	Kummara.	Muhammadans.	Dommara.
Number of families		2	2	4	4	2	1	8	1	1	2	2
Individuals ...	Males.	1	2	6	4	4	1	13	1	2	3	4
	Females	2	1	4	7	4	3	11	2	2	2	4
	Children under 12.	3	5	8	6	9*	1	12	4	3	7	4
	Total ...	6	8	18	17	17	5	36	7	7	12	12
Children living under 12 ...		3	5	8	6	9	1	12	4	3	7	4
Dead		...	...	2	6*	4	...	8	2	...	4	3

* All the six belong to one family. Seven were born, of whom 6 died and the remaining one is a baby 3 months old.

31: Slater S-5 (1916-1917) 1918 AW1 India
Telugu AW17

MYSORE.

GOWNIPALLE.

[*By E. Krishnamurti, Christian College, Madras.*]

361 *Preliminary.*—Gownipalle, Srinivaspur taluk, Kolar district, Mysore, is situated in a low marshy district.

● 133 It has no forests or even jungle—only thick under-growth. No big rivers—only a stream about a furlong from the outskirts of the village. No hills near by. But about nine miles off there is a very big hill clothed with forest and abounding in good game.

162 *Population.*—Total population of caste village 417—men 119, women 133, boys 77, girls 88; homesteads 116.

[564] *Castes.*—Brahman, Komati (traders), Dhobis, Kammala (blacksmith), Bōya and Yekili (agricultural labourers), Kummara (potters), Muhammadan, Barber, Besta (labourers), Edigi-Gandla (oil-mongers), Sāthāni (non-Brahman temple servants).

Number of families and individuals in each caste—

Caste.	Brahmans.	Komati.	Dhobi.	Bōya.	Yekili.	Kummara.	Barbers.	Besta.	Kammara.	Edigi-Gandla.	Sāthāni.	Muhammadans.
Number of families.	11	...	...	14	1	1	...	6	1	1	2	30
Males ..	16	6	6	10	...	1	...	6	1	1	2	44
Females ...	24	10	6	13	1	2	7	6	1	3	1	45
Children. {Boys ...	13	6	2	9	..	3	3	8	1	3	1	23
Children. {Girls ...	15	7	4	8	...	1	4	7	2	2	3	25
Total ...	68	29	18	40	1	7	22	27	5	9	6	137

Paracheri—Population.—Total 126—men 41, women 40, boys 20, girls 25. Number of families 31.

Statistics of births and deaths—

Year.	Population.				Total.	Births.	Deaths.				Total.
	Men.	Women.	Boys.	Girls.			Adult males.	Adult females.	Children. Males.	Children. Females.	
1912	212	210	125	122	669	22	2	5	4	...	11
1913	192	201	111	120	624	24	25	7	6	6	50
1914	180	193	107	106	586	14	10	6	3	3	22
1915	160	174	97	113	544	26	2	2	4	1	9